

14. (Three Times Amended) A method for making a top electrode for use in a chamber for processing a semiconductor wafer through plasma etching operations, the chamber including a support chuck for holding the semiconductor wafer and a pair of RF power sources; the method comprising:

10 forming the top electrode to have a center region, a first surface and a second surface, the first surface having an inlet that is configured to receive processing gases from a source that is external to the chamber and flow the processing gases into the center region, the second surface having a plurality of gas feed holes that lead to a plurality of electrode openings that have electrode opening diameters that are greater than gas feed hole diameters of the plurality of gas feed holes, the plurality of electrode openings being configured to define the second surface which is located over a wafer surface of the semiconductor wafer,

15 wherein the second surface is configured to define a second surface area and the wafer surface defines a wafer surface area, the second surface area being larger than the wafer surface area such that when a plasma is struck between the second surface and the wafer surface, the plasma defines a first plasma sheath surface area that is proximate to the wafer surface and a second plasma sheath surface area that is proximate to the second surface area, the second plasma sheath surface area being greater than the first plasma 20 sheath surface area.

15. The method for making a top electrode for use in the chamber as recited in claim 14, further comprising:

25 coupling the top electrode to one of the pair of RF power sources and the support chuck to the other one of the pair of RF power sources.

16. (Three Times Amended) The method for making a top electrode for use in the chamber as recited in claim 15, further comprising:

forming the electrode openings to be at least 0.5 mm or greater in diameter and the gas feed holes to have a diameter of about 0.1 mm.

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17. The method for making a top electrode for use in the chamber as recited in claim 15, further comprising:

defining the electrode openings to a depth of between about 1/32 inch and 1/4 inch.

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18. The method for making a top electrode for use in the chamber as recited in claim 16, further comprising:

fixing a separation of between about 0.75 cm and about 4 cm between the electrode surface and the wafer surface.

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19. The method for making a top electrode for use in the chamber as recited in claim 18, further comprising:

inserting two or more gas buffer plates within the center region of the top electrode.

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20. (Twice Amended) The method for making a top electrode for use in the chamber as recited in claim 18, further comprising:

striking the plasma between the separation, the plasma having the first plasma sheath surface area that is proximate to the wafer surface and the second plasma sheath surface area that outlines an inner region of the top electrode openings, such that the second plasma sheath surface area is greater than the first plasma sheath surface area.